56.12 BILLINGS CARBON MONOXIDE LIMITED MAINTENANCE PLAN

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56.12.2 Introduction

As a result of the 1977 amendments to the Clean Air Act (CAA), Billings was designated nonattainment for carbon monoxide (CO) by the U.S. Environmental Protection Agency (EPA) in a Federal Register (FR) notice (43 FR 9010) on March 3, 1978. The National Ambient Air Quality Standard (NAAQS) for CO is 9 parts per million (ppm) for an 8-hour average concentration, not to be exceeded more than once per calendar year. The CO violation was attributed primarily to motor vehicle emissions and control plans were developed to bring Billings back into compliance following the nonattainment designation.

The initial CO control plan focused on reconstructing the intersection at Exposition Drive and First Avenue in Billings. The final CO control plan incorporated computer modeling and intersection reconstruction, and was approved in the January 16, 1986 FR (51 FR 2397). The Billings CO issue was reevaluated in September 1990 based on the 1990 amendments to the CAA and the lack of NAAQS exceedances in the 1988 and 1989 CO monitoring data. In the November 6, 1991 FR notice (56 FR 56799), Billings was listed as a “Not Classified” CO nonattainment area (NAA). However, EPA’s redesignation process required a new emission inventory (EI) and development of a maintenance plan.

The Montana Department of Environmental Quality (Department) developed a redesignation request with guidance based on the 1990 amendments to the CAA and a September 4, 1992 EPA memo from John Calcagni to the EPA Regional Air Directors. The Governor of Montana submitted the redesignation request to EPA on February 9, 2001, and EPA approved it in an FR notice on February 21, 2002 (67 FR 7966). The redesignation request addressed the five criteria required by Section 107(d)(3)(E) of the CAA, as follows:

Criterion 1: Attainment of the Applicable National Ambient Air Quality Standard
Criterion 2: State Implementation Plan Approval
Criterion 3: Permanent and Enforceable Improvements in Air Quality
Criterion 4: Fulfillment of CAA Section 110 and Part D Requirements

Criterion 5: Fully Approved Maintenance Plan under CAA Section 175A

Criterion 5 was addressed based on fulfillment of criteria addressed in the October 6, 1995 EPA memo from Joseph Paisie, Group Leader for Integrated Policy and Strategies Group. That memo stated nonclassifiable CO nonattainment areas fulfilling specific criterion could choose to seek redesignation under a limited maintenance plan (LMP) rather than the more rigorous full maintenance plan. At the end of 2009, Billings still met the LMP criterion as outlined in the Paisie memo by having a CO design value at or below 7.65 ppm (85 percent of the 1-hour NAAQS). Under the LMP option of CAA Section 175A, after the initial 10-year period, States are required to submit a revision or update to the LMP for another 10-year period. The Department has updated the 2002 Billings CO LMP and the revisions are discussed under the following five provisions.

56.12.7.1 Provision 1: Attainment Inventory

On April 12, 1999, the Department submitted to EPA an EI for 1996 as part of the Billings CO redesignation request. The CO emissions in the EI were calculated to represent a standard CO season day, a typical 'winter day' in a typical 'CO season' for the base year of 1996 (January 1 to December 31). The CO season covered the months of January, November, and December 1996. A weekday within the CO season was selected since the highest average daily traffic (ADT) generally occurs during the work week (i.e., Monday – Friday). The study area was comprised of 547 one-kilometer square (km^2) grids which included the Billings CO NAA and the surrounding region outside of the NAA, which included the communities of Huntley and Laurel.

The total amount of CO estimated in the 1996 Billings CO EI study area on a standard CO season weekday was 144,646 kilograms (kg). Thirty area sources and one general point source category, composed of seven individual industries, were identified as significant CO emitters. Those sources were assigned to seven broad categories: aviation exhaust (2,444.02 kg/day), commercial and residential natural gas use (374.66 kg/day), industrial point processes (3,656.6 kg/day), nonroad motor exhaust (6,669.0 kg/day) railroad locomotive exhaust (235.47 kg/day), residential wood burning (12,204.34 kg/day), and roadway motor vehicle exhaust (119,061.84 kg/day). Motor vehicle exhaust contributed 82.31 percent of all estimated CO emissions. Minor contributing source categories and their corresponding daily percentage of contribution were residential wood burning devices (8.44 percent), nonroad motor vehicle exhaust (4.61 percent), seven industrial point sources (2.53 percent), and aviation exhaust (1.69 percent). Commercial and residential natural gas combustion and railroad locomotive exhaust produced less than one percent of the estimated daily emissions in the 1996 Billings CO EI study area.

The 1996 CO EI used estimates of actual emissions and the 2009 CO EI update was developed with surrogates applied to the 1996 EI emissions, except for the industrial point sources where actual emissions were obtained from the Department's permit fees database (CEDARS -Consolidated Environmental Data Acquisition and Retrieval System). The emissions were again divided into seven source categories: aviation exhaust, commercial and residential natural gas combustion, industrial point processes,

nonroad motor vehicle exhaust, railroad locomotive exhaust, residential wood burning, and onroad motor vehicle exhaust. The 1996 EI was updated to 2009 levels using a combination of factors such a population growth, change in traffic volumes, and the results of the most recent EI of industrial point sources, which are discussed below.

Population

The percent change in the population of Yellowstone County from 1996 to 2009 was selected as a surrogate to estimate the change in emissions for several area source categories. Every year by July 1, the Montana Department of Commerce, Census and Economic Information Center (CEIC) estimates the population of Montana cities and counties using U.S. Census data. As of July 1, 1996, the population of Yellowstone County was estimated at 126,6231 and on July 1, 2009, the county population was estimated at 144,7972, an increase of 14.35 percent over the 1996 to 2009 time period. Over the same time period, the estimated population of the city of Billings increased from 86,369 to 105,8453, resulting in a change of 22.55 percent. Department staff, using professional judgment, elected to use the change in the Yellowstone County population as the more conservative value for estimating increases in certain area source categories.

Industrial Point Sources

Table 56.12.7.1.A presents the estimated actual 1996 and 2009 emissions for a CO season day for the three point sources in the Billings CO NAA with their 1996 operating schedules. For consistency and due to lack of additional information, the 1996 operating schedules were applied to the annual 2009 emissions.

1 http://www.ceic.mt.gov/HistoricalPopData.asp
2 http://www.ceic.mt.gov/index.asp
3 http://ceic.mt.gov/

Table 56.12.7.1.A. Point Source Emissions in the Billings CO NAA, 1996 and 2009 CO Season Days.

Source	Hours /Day	Days/ Week	Weeks /Year	Percent of Emissions During CO Season	1996 Actual CO Season (kg CO/CO day)[1]	2009 Actual CO Season (kg CO/CO day)	Percent Change	Permit Number
ConocoPhillips Company	24	7	52	25	490.00	1,287.26	162.71	2619
PPL Montana, LLC (formerly Montana Power Company)	24	7	47	28	581.90	483.09	-16.98	2953
Western Sugar Company	24	7	20	51	859.40	910.48	5.94	2912
Totals	--	--	--	--	1,931.30	2,680.83	38.81	--

[1.] kg = kilograms.

Any industrial point source emitting less than 1 metric ton during a CO season day in the Billings CO NAA was not included in this table for consistency with the approach in the development of the initial 1996 Billings CO EI. This approach eliminated the three industrial sources listed in Table 56.12.7.1.B. If these three point sources were included in the 2009 CO EI update, their emissions would only represent approximately 2% of the total CO emissions from the point sources within the Billings CO NAA.

Table 56.12.7.1.B. Point Sources & Emissions Omitted from the 1996 to 2009 CO Season Day Update.

Source	2009 Actual CO Season (kg CO/CO day)[1]	Permit Number
Billings - Wastewater Treatment Plant	52.23	3827
Cremation and Funeral Gallery	0.10	3116
Interstate Brands Corporation	3.04	3107
Total	55.37	

1. kg = kilograms.

Annual Average Daily Traffic

The mobile source EI surrogate chosen was annual average daily traffic (AADT) increases based on data collected over the 1996 to 2009 time period by Montana Department of Transportation automatic traffic recorders (ATR) on the roadways in the Billings CO NAA4. The four, representative data sets chosen were:

- 19th Street W between Wyoming Avenue and Yellowstone Avenue,
- Main Street (U.S. Route 87) between Milton Road and Hansen Lane,
- Broadwater Avenue between 22nd Street West and Gay Place, and
- U.S. Interstate 90 (I-90)

These roads are classified as local, principal arterials (two) and interstate, respectively. Table 56.12.7.1.C lists the AADT data collected during the 1999 through 2009 period for these four roads.

4 http://www.mdt.mt.gov/publications/docs/datastats/atr/atrbook09.pdf

Table 56.12.7.1.C. AADT Data for Selected Roads in the Billings CO NAA, 1996 – 2009.

Year	Annual Average Daily Traffic			
	19th Street	Main Street	Broadwater Ave.	I-90
1996	7,778	32,208	13,670	17,754
1997	--	32,734	14,480	17,683
1998	--	32,959	14,233	19,955
1999	7,964	33,597	15,426	--
2000	8,139	33,157	14,652	--
2001	8,131	34,030	14,745	--
2002	8,022	35,133	14,741	23,252
2003	8,172	35,499	14,975	23,548
2004	8,242	--	14,730	24,630
2005	8,218	37,110	14,380	24,430
2006	8,336	--	14,070	25,510
2007	7,904	36,398	14,350	26,191
2008	7,708	35,922	13,452	25,082
2009	8,203	36,858	12,832	26,161
1996 to 2009 Δ%	**5.46**	**14.44**	**-6.13**	**47.35**

The average of all percent changes in AADT for the four roadways over 1996 to 2009 was 15.28%. The percent change value of 14.44% from the Main Street data was selected as a representative value for this demonstration since it was comparable to the percent change in population for the Billings area. The overall result of the Billings CO NAA EI update from 1996 to 2009 for a CO season day in kg is listed in Table 56.12.7.1.D.

Table 56.12.7.1.D. Billings CO NAA Emissions Comparison Between 1996 and 2009 CO Season Days.

Source Category	**1996 Total Emissions** (kg CO/CO day)[1]	**1996 Percent of Total**	**2009 Total Emissions** (kg CO/CO day)	**2009 Percent of Total**	**Percent Change 1996 to 2009**	**Surrogate**
Aviation	2,345.02	2.47	2,681.60	2.46	14.35	Population
Commercial & Residential Natural Gas	258.64	0.27	295.76	0.27	14.35	Population
Industrial Point Sources	1,931.30	2.03	2,680.83	2.46	38.81	Permit Fee EI
Nonroad Motors	3,594.00	3.79	4,109.84	3.77	14.35	Population
Railroad Locomotives	50.59	0.05	57.85	0.05	14.35	Population
Residential Wood Burning	8,800.56	9.27	10,063.69	9.22	14.35	Population
Roadway Motor Vehicle	77,956.20	82.11	89,211.05	81.77	14.44	AADT[2]
TOTAL	94,936.31	100.00	109,100.63	100.00	17.86 (Average)	--

1. kg = kilograms.
2. AADT = Annual average daily traffic.

56.12.7.2 Provision 2: Maintenance Demonstration

An October 6, 1995 EPA memo from Joseph Paisie, Group Leader for Integrated Policy and Strategies Group stated nonclassifiable CO nonattainment areas fulfilling specific criteria could choose to seek redesignation under a less rigorous plan than the full maintenance plan. The criterion is having CO design values at or below 7.65 ppm (85 percent of the 8-hr NAAQS) at the time of redesignation request. To qualify for the LMP option, the CO design value for the area, based on the eight consecutive quarters (two years of data) used to demonstrate attainment, must be at or below 7.65 ppm (85 percent of the 8-hr NAAQS.) Additionally, the design value for the area must continue to be at or below 7.65 ppm until the time of final EPA action on the redesignation request.

Design values are determined based on the procedure outline in a June 18, 1990 EPA memo from William Laxton, Director of the Technical Support Division. For the 8-hour NAAQS, the design value is determined by the second maximum 8-hour concentration value for the most recent two years or eight quarters of data. The larger of the second maximum values (or the “highest of the second highs”) is used as the design value for each CO monitoring site. If more than one monitoring site exists in the area, the highest site design value is used as the design value for the entire NAA.

For the development of the initial Billings CO LMP, there were two monitoring sites operating in the Billings NAA with data collected in 1998 and 1999. Those sites were the Bridal Shop (#30-111-0082) and Norwest Bank (#30-111-0082). For the initial LMP, the “highest of the second highs” was monitored in 1999 data at the Bridal Shop, which resulted in a design value of 5.8 ppm. Since that design value was below the 7.65 ppm limit, the Billings CO NAA met the eligibility criterion for a LMP.

Over the next decade, other CO monitoring sites were operated in the Billings area. The Department documented the installation and removal of those sites through the annual network review process and via the submittal of network modification request forms to the EPA Region 8 office. All monitoring site actions were approved by EPA Region 8. The current CO monitoring site in Billings, St Luke’s (#30-111-0085), has operated in the church parking lot at the corner of 2nd Avenue North and North 32nd

Street since 2004. Based on the data from 2008 and 2009, the latest design value is 2.0 ppm, which is well below the 8-hr NAAQS of 9 ppm and the CO LMP eligibility threshold of 7.65 ppm. Figure 56.12.7.2.A represents the second highest 8-hr CO concentrations from all three of Montana's CO NAAs from 1998 to 2009.

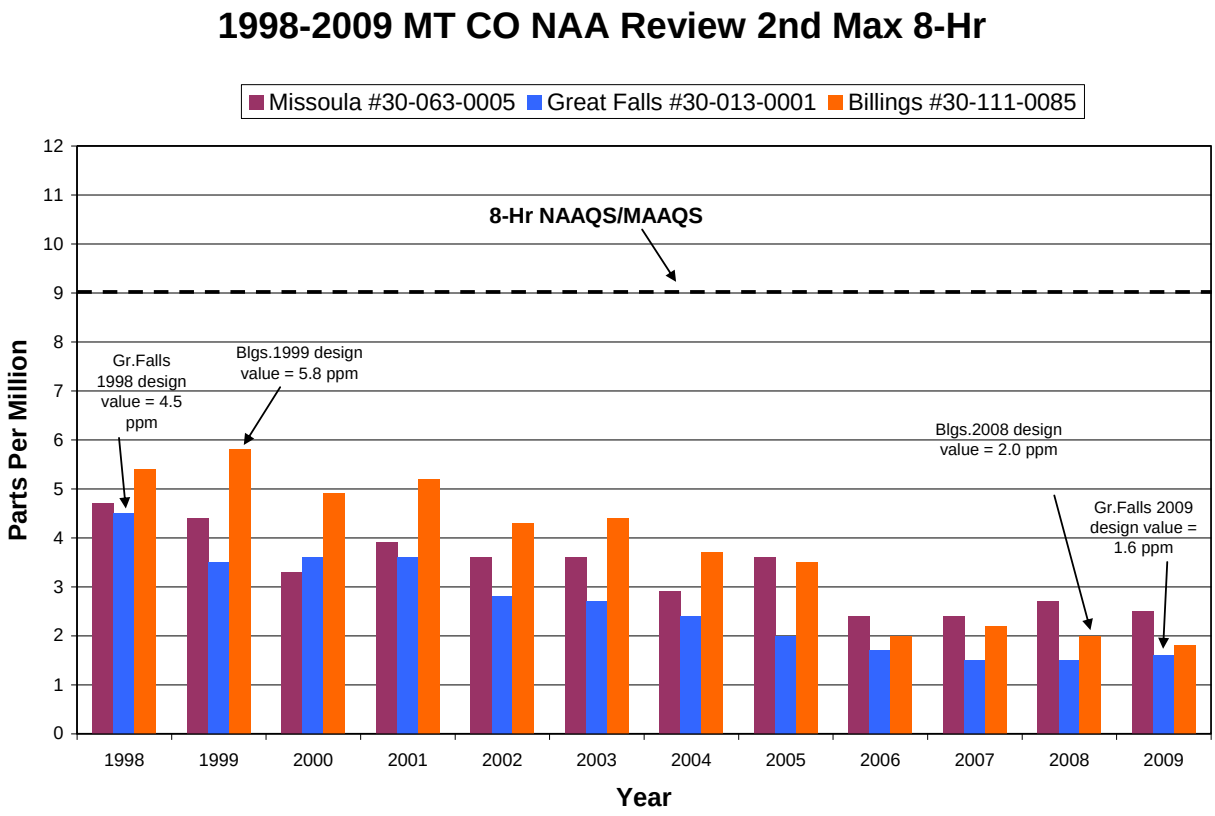

Figure 56.12.7.2.A. Second highest 8-hr CO concentrations in Montana CO NAAs from 1998 to 2009.

56.12.7.3 Provision 3: Monitoring Network/Verification of Continued Attainment

CO compliance monitoring in the Billings area will continue. In the previous LMP this consisted of the Department and the Yellowstone County Air Pollution Control (YCAPC) program operating a gaseous CO monitoring instrument in an ambient air monitoring shelter in accordance with the Montana Quality Assurance Project Plan (QAPP), the EPA Quality Assurance Manual (EPA-600/9-76-005, revised December 1984), 40 CFR Part 50 including Appendix C, and 40 CFR Part 58 including Appendices A through G. Precision and accuracy data from the CO monitoring site(s) was submitted to EPA on a regular basis through the federal air quality database. The Department will continue to monitor CO using an instrumental method or a functionally equivalent monitoring methodology as approved by EPA. Emergency episode CO monitoring in Billings shall be conducted, if necessary, in accordance with Montana's Emergency Episode Avoidance Plan.

56.12.7.4 Provision 4: Contingency Plan

Section 175(A)(d) of the CAA requires maintenance plans to contain contingency provisions to assure that Montana will promptly correct any violation of the CO NAAQS that might occur after the Billings CO NAA area was designated back to attainment. EPA's redesignation guidance notes Montana is not required to have fully adopted contingency measures that would take effect without further action by Montana. However, the contingency plan should ensure that contingency measures are adopted expeditiously once the need is triggered. The primary elements of the plan involve the tracking and triggering measures to determine when contingency measures are needed and a process for implementing appropriate control measures.

A. CO Concentration Tracking

As mentioned above in Provision 3, the Department and Riverstone Health will conduct traditional gaseous CO monitoring or surrogate compliance monitoring in the Billings area.

B. SIP-Mandated Trigger and Response

i. Trigger

The LMP will use one exceedance of the CO NAAQS as the trigger for adopting specific contingency measures. The adopted contingency measure(s) will be implemented only if a violation of the CO NAAQS occurs. Notification to EPA and to the local governments in the Billings area of any exceedance will occur within 60 days as part of the Quality Assurance/Quality Control (QA/QC) monitoring procedure.

ii. Response

Upon notification of a CO NAAQS exceedance, the Department and Riverstone Health will recommend appropriate contingency measure(s) intended to avoid a violation of the CO NAAQS. Information on the historical exceedances of the

standard, the meteorological conditions related to the recent exceedance(s), and the most recent estimates of population and traffic growth and emissions will be reviewed. The possibility of an exceptional or natural event will also be evaluated. Following the review of this information, the necessary contingency measure(s) will be proposed for local adoption. The local adoption process will be completed within three months of the exceedance notification. The contingency measures provide a maintenance area with an opportunity to maintain its status as an attainment area.

If and when a violation of the NAAQS occurs, the locally adopted contingency measure(s) will be fully implemented within one year. Section 175(A)(d) of the CAA states:

The failure of any area redesignated as an attainment area to maintain the national air quality standard concerned shall not result in a requirement that the State revise its State implementation plan unless the Administrator, in the Administrator's discretion, requires the State to submit a revised State implementation plan.

C. Possible Contingency Measures

Riverstone Health may choose one or more contingency measures to recommend to local officials and Department for consideration. Riverstone Health will select contingency measures designed to bring the area back into compliance with the CO NAAQS quickly and to specifically meet the needs of the Billings area. Some potential contingency measures include:

- Implementation of an local oxygenated fuel program in the Billings or Yellowstone County area for the winter months of November, December, and January (typically the months with the highest CO levels);
- Implementation of an episodic woodburning curtailment program; and/or
- Other emission control measures appropriate for the area that are yet to be defined.

D. Maintenance Plan Requirements

After submittal and approval of this second 10-yr LMP, there are no further requirements for any additional revisions or modifications to the LMP.

56.12.7.5 Provision 5: Conformity Determinations Under Limited Maintenance Plans

The conformity provisions of the second 10-year plan will continue from the initial plan. Since the Billings area was a 'Not Classified' nonattainment CO area, only some of the general provisions of the CAA Part D apply. These include the "General" and "Transportation" conformity provisions of CAA Section 176(c). The conformity provisions ensure that federally funded or approved projects and actions conform to the air quality planning goals of the Billings CO control plan before they are constructed. For the purpose of the LMP for Billings, the conformity issues are slightly different than in a full maintenance plan and are explained below.

The transportation conformity rule of November 24, 1993 (58 FR 62188) and the general conformity rule of November 30, 1993 (58 FR 63214) apply to nonattainment areas and maintenance areas operating under maintenance plans. Under either rule, conformity can be demonstrated by indicating that the expected emissions from planned actions are consistent with the emissions budget for the area. In areas with LMPs, conformity determinations are still required, but a LMP has no emission budget because "emissions budgets in limited maintenance plan areas may be treated as essentially not constraining for the length of the initial maintenance period" ("Limited Maintenance Plan Option for Nonclassifiable CO Nonattainment Areas," memorandum from Joseph Paisie to the EPA Regional Air Branch Chiefs, October 6, 1995).

For general conformity, all projects are considered to satisfy the "budget test" specified in 40 CFR 93.158(a)(5)(i)(A) once EPA has approved a redesignation request. For transportation conformity, federal actions requiring conformity determinations are considered to satisfy the budget test specified in sections 93.118, 93.119 and 93.120 of the conformity rule after this LMP was initially approved by EPA. In Billings, federal actions are also considered to satisfy the transportation conformity rule's requirements for expeditious implementation of transportation control measures (TCMs), because there are no TCMs in the Billings SIP. Transportation plans, transportation improvement programs and Federal projects still require conformity determinations in order to proceed, and Federal projects are still subject to the hotspot modeling requirements of the transportation conformity rule.

STATE OF MONTANA AIR QUALITY CONTROL IMPLEMENTATION PLAN	Subject: Yellowstone County Carbon Monoxide Limited Maintenance Plan

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